

## ABSTRACT OF THE DISCLOSURE

A neural network computer (20) includes a weighting circuit (21) coupled to a plurality of phase-locked loop circuits (25<sub>1</sub>-25<sub>N</sub>). The weighting circuit (21) has a plurality of weighting circuits (C<sub>11</sub>, ..., C<sub>NN</sub>) having output terminals connected to a plurality of adder circuits (31<sub>1</sub>-31<sub>N</sub>). A single weighting element (C<sub>kj</sub>) typically has a plurality of output terminals coupled to a corresponding adder circuit (31<sub>k</sub>). Each adder circuit (31<sub>k</sub>) is coupled to a corresponding bandpass filter circuit (35<sub>k</sub>) which is in turn coupled to a corresponding phase-locked loop circuit (25<sub>k</sub>). The weighting elements (C<sub>1,1</sub>, ..., C<sub>N,N</sub>) are programmed with connection strengths, wherein the connection strengths have phase-encoded weights. The phase relationships are used to recognize an incoming pattern.

TOP SECRET